

in remote parts by peripheral irritation of the terminal distribution of the sensory nerves. In electrification by insulation, electricity of high tension is actively accumulating on and beneath the skin, *i. e.*, the nerve distribution, and as actively discharging: the effects of static electricity are then in this instance produced from the periphery; and owing to the fact that the electrification is general and the tension high, no other form of electricity offers equal promise in the treatment of diseases or conditions that can be affected either in a sedative or stimulating manner from the general peripheral nerve distribution. The recent experiments of Brown-Séquard lead us to believe that many diseases may be thus acted upon.

*Ninth.*—The invention by the author of a method of obtaining an interrupted static induction current from a frictional electrical machine, adds to medical electricity a new and practical means of electrical treatment.

This current is more agreeable in its administration than ordinary induction currents. Both nerves and muscles are stimulated by it to a higher degree than is possible by means of any other induction current now in use, and a corresponding advance in the efficacy of electrical therapeutics in these two directions may be confidently expected.

The new current, furthermore, greatly enlarges the scope of static electrical machines in medicine by combining in a single machine all the advantages both of static and induction electricity.

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ELECTROTHERAPY OF THE BRAIN.—The following is a translation of a short article by Dr. Leopold Löwenfeld, in the *Centralblatt für die Med. Wissensch.*, No. 8, February 19th.

Up to date there have been published no actual experimental researches on the action of the electrical current applied through the integument, in a longitudinal or transverse direction through the head, on the circulation within the cranial cavity. The only previous investigations, especially upon the action of an electric current passed through the head, on the cerebral (meningeal) vessels, are those of Legros and Onimus, and Latourneau. Legros and Onimus (*Traité d'Electricité Médicale*, Paris, 1872, p. 197) trepanned a dog and passed the current from a battery of ten Remak cells through the brain, applying one pole to the denuded brain and the other to a wound in the neck in the neighborhood of the superior cervical ganglion. They found with the descend-

ing current, a contraction, and with the ascending current, a dilatation of the vessels. Latourneau (*Gaz. Hebdom.*, 1879, No. 40), with the assistance of Laborde, performed a single experiment: in a five-weeks-old kitten he applied the positive pole of a battery of eighteen elements (Onimus-Brewer) behind the ascending ramus of the lower jaw, and the negative pole to the forehead. He observed the vessels of the dura mater (?), and after ten to fifteen seconds saw contraction of the arteries and later of the veins. With every interruption (reversal ?) the anæmia increased for a moment, after which the vessels slowly dilate again. The contraction of the vessels could be produced at will in the denuded pia mater. I have repeated Latourneau's experiment, and have obtained, in place of the expected contraction, a dilatation of the vessels, and this with the same location of the poles. Hence the importance of Latourneau's experiment is by this much lessened.

I have performed a large series of experiments to ascertain, on the one hand, facts relative to the action of therapeutic currents applied percutaneously on the cerebral circulation, and, on the other hand, to establish a basis, though a narrow one, for the electrotherapy of the brain. In these experiments I used forty animals, thirty of them rabbits. In most cases, the effect of currents directed in longitudinal and transverse directions percutaneously through the head was studied, but a number of experiments with the arrangement of Legros and Onimus (one pole on the neck and the other on the denuded brain) were instituted.

The most notable results of these experiments can be stated as follows:

1. A descending current (positive pole to the forehead, negative pole to the neck) causes a contraction of the arteries of the pia.
2. An ascending current (positive pole to the neck, negative to the forehead) causes dilatation of the arteries.
3. With a current sent transversely through the head, there is dilatation of the arteries on the side of the anode, and contraction on that of the cathode.
4. Induction currents carried through the head in a longitudinal direction cause increase of the amount of blood in the brain.

This last point requires a still further study. It appears that the action of the induction current, like that of the constant current, is not restricted merely to the dilatation of the vessels.

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BROMIDE OF ETHYL.—The following are the conclusions deduced by MM. Bourneville and H. d'Olier from a series of researches on the physiological and therapeutic effects of bromide of ethyl, published in the *Progrès Médical*, March 28th.

1. The pupillary dilatation at the beginning of the inhalation of bromide of ethyl is not at all constant.
2. Complete muscular resolution is the exception.
3. The anæsthesia produced varies to a large degree in different subjects.
4. The temperature, the secretions, and the general condition appear to undergo no modifications.
5. The pulse and the respiration are slightly accelerated.
6. A tremor, more or less pronounced, of the members may be produced during the inhalation, but it does not persist beyond this.
7. Hysterical attacks are generally easily arrested by the bromide of ethyl.
8. Epileptic attacks may sometimes be cut short by giving the drug during the tonic period, but more frequently the inhalations are ineffectual.
9. In epilepsy the regular employment of bromide of ethyl, administered in daily inhalations during a period of two months, notably diminished the frequency of the attacks.

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ANÆSTHETICS.—At the session of the Société de Biologie, February 26th (reported in *Le Progrès Médical*), M. P. Bert announced the results of experimentation with various anæsthetics on dogs, squirrels, etc., which are noteworthy. The anæsthetics employed were ether, chloroform, amylene, chloride of methyl, and bromide of ethyl. The method of experimentation was as follows: The dog being tracheotomized, he introduced into the canula the short branch of a Y tube. The two equal branches are furnished with two *souppes*, opening in the opposite direction; by the one enters air containing a known quantity of anæsthetic vapor, and through the other departs the product of expiration. He found that with the same quantity of pure air, say one hundred litres, and with animals of the same species, whatever their size or strength, the weight of the anæsthetic liquid, the vapor of which is mixed with one hundred litres of air, is always the same at the moment when anæsthetic sleep appears, and at the moment when death occurs the amount of the anæsthetic has reached another